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Røj-Lindberg, Ann-Sofi

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Hidden dimensions in the social practices of mathematical sciences – observing democracy in Finnish lower secondary classrooms

Ann-Sofi Røj-Lindberg, with K-E. Berts, M. Braskén, A-S. Härmälä-Braskén and A. Ohtonen
Faculty of Education and Welfare Studies, Åbo Akademi University, Vasa, Finland

Introduction

- Subject teaching and democratic education cannot be treated in disconnection [3]. There are multidimensional links between the two domains [2].

Aim

- The aim of the research is to understand how mathematical sciences in Finnish grade 7–9 classrooms prepare students to uphold a democratic society.

Background and RQ:s

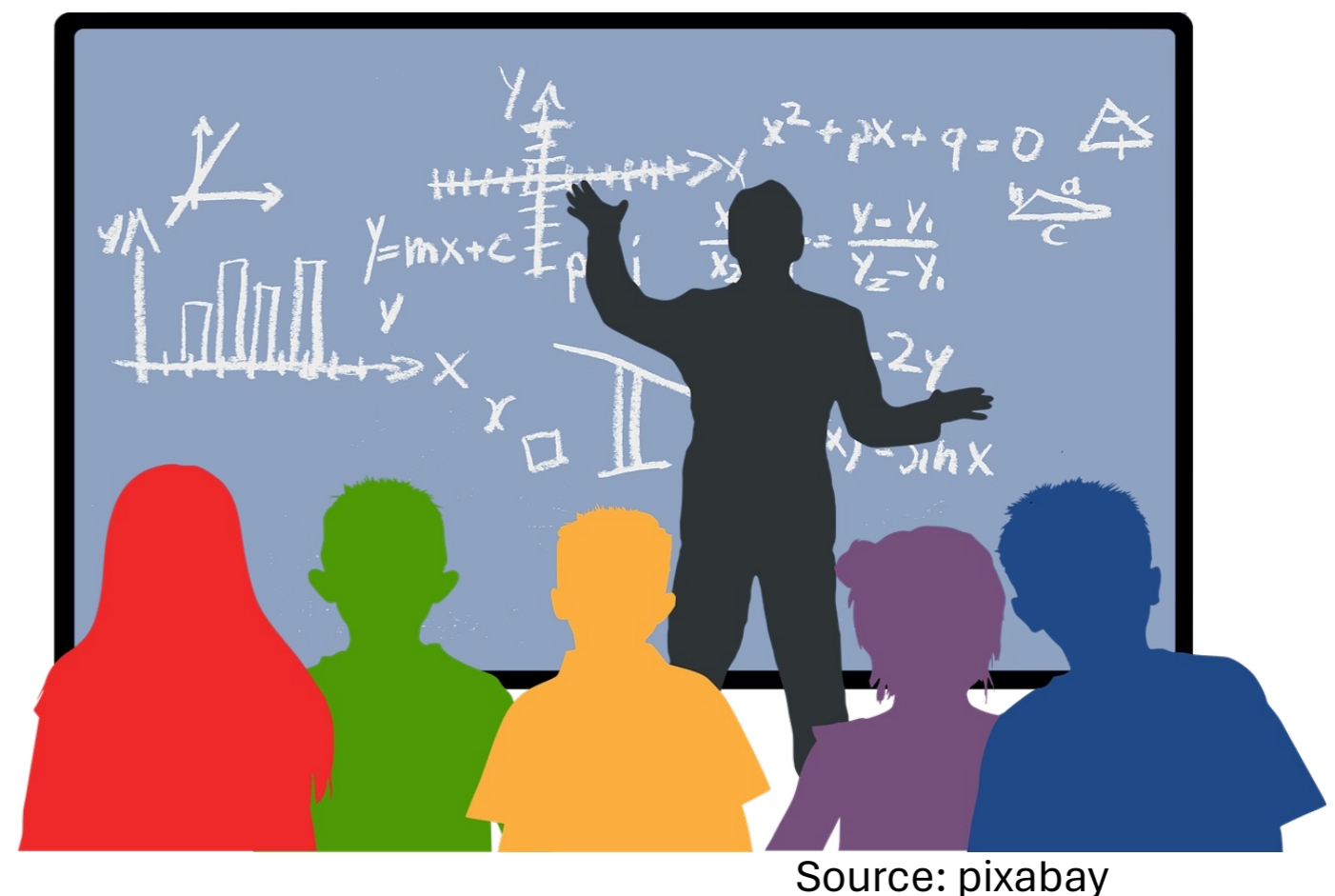
- Empirical research that addresses democratic competence in grade 7–9 classrooms is practically non-existent in a Finnish context.
- Lack of knowledge about where students' and teachers' values and attitudes come from, how they are constituted and how tensions between democracy and authority plays out.
- Ideal didactic forms of participation for students to experience democracy are deliberative talks, student agency, creative problem solving, critical reflection and authenticity [4].
- How do mathematical sciences in Finnish educational contexts prepare students to uphold a democratic society?
- In what degree are the five didactic forms of participation visible in the interactive practices in the mathematics, physics and chemistry classrooms?

Methodology

- Participants are Swedish-speaking and Finnish-speaking grade 7–9 teachers and students in mathematics, physics and chemistry.
- Case study with components of citizen science, incl. advisory board of teachers as co-researchers
- Video recordings of lessons and interviews with teachers as the primary empirical material (2024-2025)
- Bilingual survey to teachers (2024) adapted from [1]
- The QR code directs you to the Swedish version.



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Source: pixabay

Expected research results

- Include uncovering hidden dimensions of social classroom practices, providing insights for improving access to quality education in mathematical sciences and highlighting tensions between teachers' values and classroom actions.
- The results will help us discuss how such tensions could be eased, and how classrooms could improve access of as many students as possible to a quality education in mathematical sciences, so that they become empowered to participate in and uphold a democratic society.
- The project will contribute to the pedagogical debate through publications in scientific journals, teacher journals, and daily newspapers, as well as through podcast episodes and the education of future teacher

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